IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Gordon G. Guay	Art Unit	: 1745
Serial No.	: 10/664,818	Examiner	: Tony Sheng Hsiang Chuo
Filed	: September 16, 2003	Conf. No.	: 3443
Title	: ENHANCED FUEL DELIVERY FOR DIRECT METHANOL FUEL CELLS		

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Commissioner for Patents
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REPLY BRIEF

Pursuant to 37 C.F.R. § 41.41, Applicant responds to the Examiner's Answer as follows:

Claim 11

The examiner points out features of claim 11 that are allegedly disclosed by the Deinzer fuel cartridge shown in Figure 3 (reproduced below).

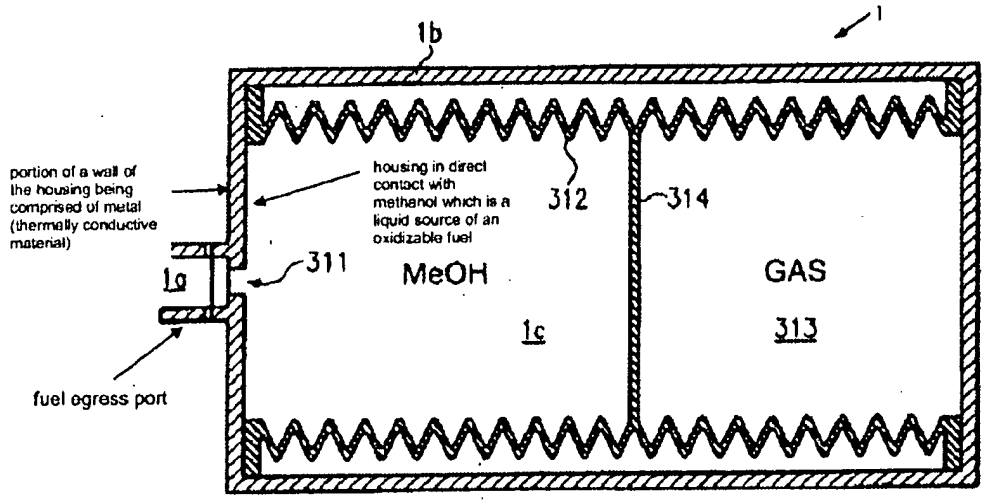

FIG. 3

The examiner's argument (as presented in the examiner's annotation of Fig. 3 above) however, only addresses part of the argued limitation. Specifically, the examiner ignores that Appellant argued and claimed: "a housing ... containing and in direct contact with a liquid

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source ..." and "having at least a portion of a wall of the housing being comprised of a thermally conductive material."

The examiner's reasoning does not address the limitation of the housing "containing ... a liquid source." In order to address this limitation, the examiner argues that the membrane 312 in Deinzer is part of Deinzer's housing. However, this construction of Deinzer is contrary to how Deinzer describes the cartridge and is contrary to how one skilled in the art would view the housing. Indeed, Deinzer discloses a cartridge 1 that contains fuel, but the walls 1b of the housing 1, do not contain the fuel, but rather the membrane 312, wall portion adjacent the egress 1a, and partition wall 314 contain the fuel.

The examiner also annotates Fig. 3 with the note that "**the housing in direct contact with the methanol ... .**" However, that annotation does not address the argued feature of the "housing containing and in direct contact with a liquid source of fuel." So, unless the examiner takes the position that the housing in Deinzer consists only of the metallic wall adjacent to 1a, it is submitted that the examiner has not shown that Deinzer describes the claimed feature, arranged as in the claim.

Appellant maintains that Deinzer would not inherently be capable of sinking heat or performing this function at least as well as the claimed structure because Deinzer does not expressly describe: "having at least a portion of a wall of the housing being comprised of a thermally conductive material." The examiner addresses by pointing out Deinzer's disclosure of metallic materials. Appellant acknowledged that Deinzer mentions metallic materials as an option, but that the option of using a metallic construction is mitigated by Deinzer's teachings to interpose any of the various embodiments of the inner sleeve 312 comprised of a thermally insulating material to contain the fuel. It is a reasonable inference that the inner sleeve, which is what contains the liquid source of fuel, would not allow the Deinzer cartridge to function in an equivalent manner as Appellant's claim 11, because of the thermal properties of the sleeve precluding efficient heat transfer to the liquid source of fuel. Additionally, Deinzer offers no guidance on placement of the fuel cartridge to take advantage of heat generated by components.

The examiner dismisses appellant's argument regarding: "heat dissipating components," as not being commensurate with the scope of the claim. Appellant believes that the argument is

commensurate with the scope of claim 11. Claim 11 includes the feature: "the at least a portion of a wall of the housing sinking heat generated from external components to enhance a delivery rate ... ." This functional limitation requires a specific configuration of the cartridge with respect to the device that will receive the cartridge and therefore the argument pertaining to heat dissipating components is commensurate with claim 11.

In conclusion, for the reasons stated above and in Appellant's brief, it is clear that Deinzer reference neither describes nor suggests claim 11.

Claim 13

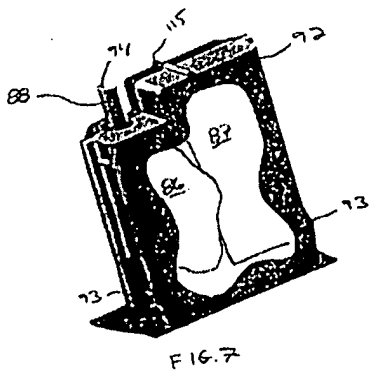
The examiner in an effort to show that Deinzer anticipates claim 13 misconstrues the teachings of Deinzer. Claim 13 requires the feature that "remaining portions of walls of the cartridge are thermally insulating." The examiner misconstrues Deinzer arguing that the inner sleeve "312" formed from an elastomer (thermally insulating material) can be construed as being part of the housing of the fuel cartridge of Deinzer.

However, the examiner's construction is clearly an improper reading of Deinzer fashioned to avoid addressing deficiencies in the teachings of Deinzer when applied to Appellant's claims.

Claims 1-9

Claim 1, requires *inter alia*, "a fuel egress port supported by the housing." Appellant contends that Lawrence teaches that 88a, the exit port, is supported on the expandable fuel bladder, not the housing, as called for by the claim.

The examiner points to Figure 7 included below, to argue that "**... the exit port "88" is indeed supported by the housing "92" as well as attached to the expandable fuel bladder "86".**"



F16.7

Appellant maintains that Lawrence does not provide any description of item 88. Lawrence only describes item 88a, which is clearly shown in Figure 10, as attached to the bladder 86a. See also the discussion in Lawrence [0076] (**Sealable exit port fluidly communicates with fuel bladder 86.**)

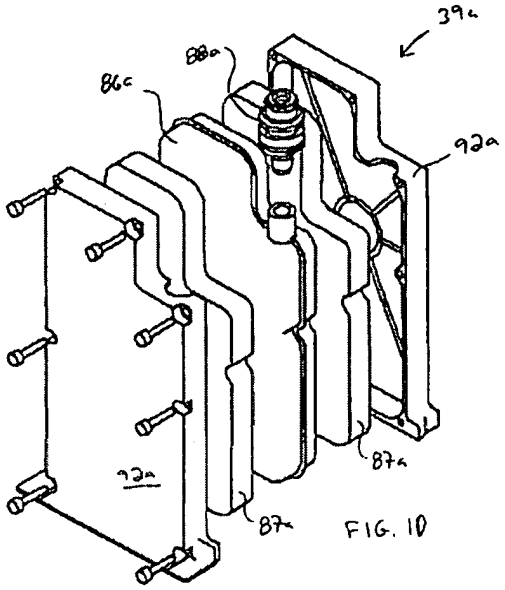


FIG. 10

Item 88 in Fig. 7 appears to protrude through the item 92 but does not appear to be supported on the item. Given Lawrence's need of the bladder, it is a logically justifiable inference that item 88 is supported on the bladder 86, as discussed in [0076], and likely is not "supported by the housing."

Appellant disagrees with the examiner's statement that "**there is no clear definition of a "surface area enhanced planar vaporization membrane" provided in the specification of the present application.**" Appellant has provided several examples with accompanied description of surface enhanced planar vaporization membranes.[1] Therefore, the examiner's argument that "**a surface area enhanced planar vaporization membrane is just any membrane that is capable of causing liquid methanol fuel to undergo a phase change to a vaporous fuel,**" ignores claimed limitations and is in error.

[1] See examples described in conjunction with Figs. 2B, 2C, 2D, 2E of Applicant's specification.

The examiner, in addressing Appellant's contention that the examiner has not offered any guidance on how to accomplish the combination of the alleged "surface enhanced membrane" of Hirsh with the bladder as taught by Lawrence, argues that "**... there are no structural limitations in claim 1 that detail how the surface area enhanced planar vaporization membrane is configured in the fuel cartridge.**" Appellant disagrees.

Appellant's Claim 1 specifically has "the surface area enhanced planar vaporization membrane residing in the container." Previously, the examiner argued that the membrane would be placed in the fuel cartridge.[2] Now, the examiner now proposes to place the membrane not in the fuel cartridge, but at the egress port, stating: "**Therefore, one skilled in the art would envisage placing the vaporization membrane at the opening of the egress port inside the housing in order to allow the use of high concentration fuel with passive fuel delivery as stated in Hirsch et al, paragraphs [0012] & [0013].**" Accordingly, whether placing the membrane at the opening of the egress port or in the fuel cartridge, fails to adequately address what to do with the bladder described in Lawrence, which is described by Lawrence as attached to the egress port. Therefore, either the examiner places the membrane in the bladder and thus has the attendant problems pointed out previously, or the examiner has made yet another, but unstated modification of Lawrence.

Claim 10

The appellant argued that no combination of Lawrence with Hirsh specifically allude to the inherent desirability of placing the fuel cartridge next to e.g., the CPU, as opposed to other components that may not dissipate appreciable amounts of heat, and indeed neither of the references suggests the sidewall construction of the main claim.

The examiner again argues that Appellant's argument is not commensurate with the scope of claim 10. The examiner argues that: "**There are no limitations in the claim that require placing the fuel cartridge next to a component that dissipates heat such as a CPU.**" Appellant disagrees that any such limitation is required.

The examiner originally argued the inherency of heat produced from a laptop, which Appellant contended was addressed to claim 10. Claim 10 requires a portion of the wall of the

[2] Final Action pages 4, 5.

housing be comprised of a thermally conductive material that sinks heat. Here, the examiner's reasoning is a clear exercise in *ex post* reasoning as was cautioned against by the Court in *KSR*. The examiner uses a reference that describes a cartridge (item 39, which includes the canister 92 described by Lawrence) not a container, as claimed in claim 10, but without offering any basis for the conclusions based on inherent features of a laptop. No combination of Lawrence with Hirsh suggests the desirability of placing the fuel cartridge next to e.g., the CPU, as opposed to other components that may not dissipate appreciable amounts of heat, and indeed neither of the references suggests the sidewall constructions of the main claim.

Claim 16

In answer to Appellant's arguments concerning claim 16, the examiner states:

> **As disclosed in the Lawrence reference, it is known in the art that fuel cell assemblies that include a fuel cartridge are used in portable electronic devices such as cell phones and computer laptops. It is also well known in the art that computer laptops comprise heat generating components. Therefore, because of the close proximity of the fuel cartridge and the heat generating components, the fuel cartridge would be placed in a compartment of the portable electronic device such that the wall of the housing of the fuel cartridge, comprised of a thermally conductive material, is placed in thermal communication with a heat generating component of the electronic device.**

Appellant does not dispute certain of the inherency positions taken by the examiner. Inherently, portable devices while in operation dissipate heat and that these devices have heat generating components.

However, the inherent characteristics of such electronic devices were not taken into consideration by either of the references or indeed their combination. The alleged combination of references clearly provides no suggestion or motivation to use the heat generated by the electronic device. The alleged combination fails to suggest a deliberate configuration of the electronic device to accept a fuel cartridge into a compartment such that the portion of the housing comprised of the thermally conductive material is placed in thermal communication with a heat generating component in the electronic device.

Claim 19

In addressing Appellant's argument that the examiner has not shown a construction of a fuel cartridge that permits heat generated by the component in the electronic device to increase a vapor pressure of fuel in the cartridge, is possible by the construction of the Lawrence and Hirsh references, the examiner argues: "**The Lawrence reference discloses disposing a fuel cartridge in an electronic device that inherently comprises components that generate heat. Since the electronic device implicitly sinks heat into the fuel cartridge, the vapor pressure of the methanol fuel would inherently increase.**" However, Lawrence as argued above, uses the bladder, comprised of a thermally insulating material, and never mentions to take advantage of heat generated by the device. It is only after gleaning teachings from Appellant's specification and claims does the desirability of the construction of Appellant's claimed fuel cartridge and the desirability of the recited placement become apparent.

Claims 23 and 25

The examiner again switches the argument regarding this feature of appellant claims. Now the examiner argues:

> **As shown in Figures 1 and 2 of Lawrence et al, the fuel cartridge is disposed in a compartment of the portable electronic device. Since the portable electronic device inherently comprises heat dissipating elements, then the housing of the fuel cartridge is disposed adjacent a heat dissipating element of the electronic device because of the close proximity of the components.**

The examiner shifts reliance from Deinzer to Lawrence. In either event, the examiner still has the same problem with the alleged combination because Lawrence does not possess a structure capable of using "heat generated from external components to enhance a delivery rate of the liquid source of oxidizable fuel in a vapor phase to the egress port of the container," as in base claim 11. Therefore, no combination of Lawrence with Deinzer suggests that: "the portion of the wall of the housing of the cartridge is configured to be disposed adjacent a heat dissipating element of the electronic device," as in claim 23.

Claim 26

The examiner fails to fully answer Appellant's argument regarding claim 26.

The examiner fails to address that: Deinzer discloses that the fuel is in a bag 612[3] or within inner sleeves 312-512. On this basis, Appellant contends that the examiner has not shown how: "a surface area enhanced planar vaporization membrane" would not be accommodated by the disclosed structures in Deinzer.

The examiner again shifted the argument, but failed to show that "... **the vaporization membrane would necessarily be placed over the opening of the egress port inside of the housing in order to provide the known advantages of delivering the fuel as a vapor**" would be useful in Deinzer's described structure.

For these reasons, and the reasons stated in the Appeal Brief, Applicant submits that the final rejection should be reversed.

This Reply Brief is accompanied by a Request for Oral Hearing.

Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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[3] Deinzer [0084].